



Desktop Metal™

[CASE STUDY]

EAC Metal Ornaments

www.desktopmetal.com



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Overview

Founded in 1992 with a focus on the manufacturing of metal accessories for the footwear and leather goods markets, EAC over the last decade diversified its services to include metal accessories for swimwear and lingerie, as well as luxury leather goods, luxury packaging, cosmetics and interior design.

Today, EAC is vertically-integrated, from the 3D design studio up to up to their precious metal plating facility and ornaments final achievement (glueing, enameling and specific packing) at their Romanian sister company, and works closely with customers to design, prototype and manufacture custom accessories that meet the requirements of each designer's collections.

01

The Challenge

For luxury items, custom accessories are essential. In addition to setting apart a brand, product line or individual item, custom hardware often serves as a brand identifier and signals both quality and craftsmanship.

But for companies like EAC Metal Ornaments, the challenge lies in finding ways to manufacture those parts to ensure they meet customer expectations for customizability, appearance and price.

Currently, EAC uses a variety of on-site manufacturing methods - including Zamack die casting, hot and chemical stamping of brass and lost wax casting - each of which comes with its own set of challenges.

Like other traditional manufacturing methods, each requires custom tooling that is both expensive and time consuming to produce, and even slight design changes require the fabrication of new tooling - creating further delays and increasing costs.

The high cost of tooling also makes low-volume manufacturing a challenge, because if EAC wants to keep per-part costs low, they must produce thousands of a particular part to amortize those tooling costs.

By investing in metal 3D printing, EAC hopes to get the best of both worlds - a system that eliminates the costly and time-consuming process of fabricating tooling, and is capable of producing parts in a range of volumes while still keeping per-part costs low.

In Desktop Metal's Shop System, they found it.



02

The Shop System Solution

Using the Shop System, EAC is now able to dramatically shorten development timelines by moving directly from a digital design to a printed part in days as opposed to weeks.

When combined with the ability for the Shop System to print hundreds of parts in a single print run, the company has been able to significantly step up production on certain parts.

Since installing the system, EAC's leather hardware production has increased from 10,000 pieces per week to more than 73,000. The company was also able to produce more than 110,600 apparel ornaments, like those found on lingerie, in just a week, a process that would normally require two weeks.

It's in the DNA of EAC to offer our customers creatively designed products.

We have been teasing the benefits of additive manufacturing for our customers, and with the Shop System, that is now a reality - we can partner with our customers and fulfill their designers' dreams and most creative ideas.

Going forward, additive manufacturing should be the future of metallic ornaments, both for the creativity it brings to designers and for the eco-friendly approach and spirit that is involved with the industry.

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Patrick Chouvet

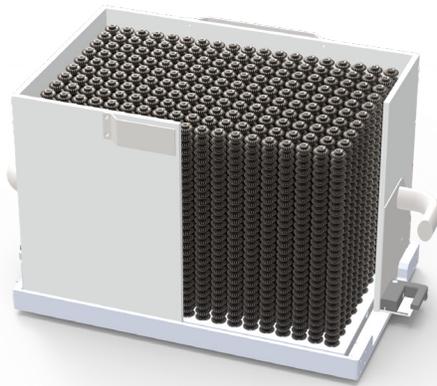
CEO, EAC Metal Ornaments

The Shop System also helped EAC reduce the time needed to craft and assemble custom jewelry by 250 hours. The company can now produce 17,600 individual pieces per week, with no assembly required.

And because the Shop System allows for the creation of far more complex geometry than traditional manufacturing methods, EAC is able to work closely with customers to develop distinctive accessories that set their brand apart.

The tooling-free nature additive manufacturing not only helps reduce the cost of creating those complex parts, but also makes it easy for EAC to adapt as customer demands change from season to season. Designs can be quickly fine-tuned or new parts created before being sent directly to the printer.

The Shop System's design, which is intended for mid-volume manufacturing, also offers benefits to EAC. And since the parts are supported in the powder bed, there is no need to spend time and labor machining away support structures, further reducing per-part costs.



An example 16L Shop System Build Box filled with Ornaments

03

Why Desktop Metal?

For EAC, the Shop System and binder jetting technology represented a sea change in the way they thought about additive manufacturing.

The company now uses wax printers to create molds for lost wax casting, and resin printers to print parts that can be metallized for prototypes, the Shop System was the first additive solution that offered the company the chance to print customer parts on an industrial scale.

In addition to speed and volume, EAC chose the Shop System for its ability to create highly complex parts with a superior surface finish to laser-based systems, making it ideal for creating metal ornaments.



04 Use cases

Metal hardware - clips, snaps, hooks, ornamentation - may be considered secondary to the overall design of many products, but it is often a key opportunity for differentiation and branding.

For many brands, metal ornamentation serves as a key design detail, garnering recognition and generating additional value. While lower-tier goods often rely on off-the-shelf hardware due to cost constraints, luxury brands opt for custom designs to signal value and exclusivity.

figure 1



The Shop System makes it easy to incorporate features, like sweeping, organic shapes, internal cavities and precisely interwoven parts (figure 1), that would otherwise be difficult - if not impossible - to produce.

figure. 2



The delicate, curved shape and relatively thin cross-section of parts like those shown in the far right of Figure 1 would be cost-prohibitive to produce via traditional machining. Investment casting - which would require weeks of lead time to create tooling and complex wax patterns - is similarly unfeasible. With the Shop System, however, EAC can print hundreds of these per print bed as soon as the design is finalized.



Custom metal ornamentation (Figure 2) can also be used to elevate consumer goods packaging and cosmetic products by incorporating unique design features that signal quality and prestige. This ornament features a ball encapsulated in the center of the outer casing, a design that would be impossible to produce with traditional manufacturing techniques, but which the Shop System can produce with ease.



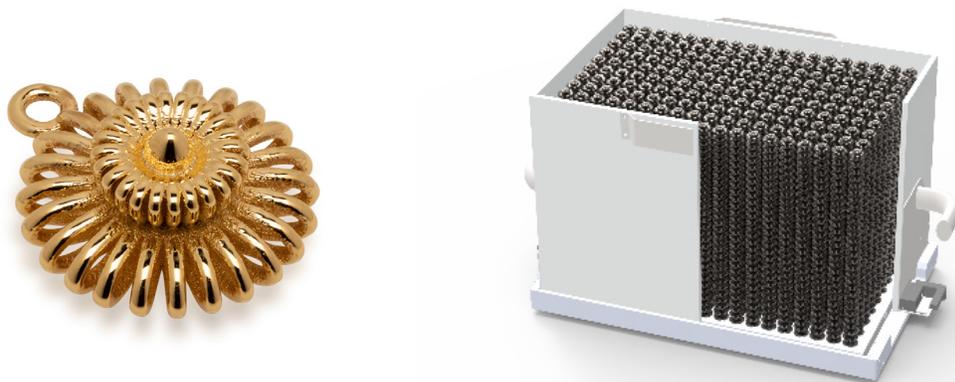
The Shop System also opens the door to new levels of creativity in the design of jewelry like earrings. Though they have been made and worn for nearly 5,000 years, different manufacturing methods have had a significant impact on how their design has evolved, and additive manufacturing is no different.

These two earrings designs from EAC (figures 3 and 4) feature internal cavities that are enclosed by the part. To produce these designs via traditional manufacturing methods, the wires would need to be precisely woven before being attached at the ends, a process that would be too slow and expensive to justify. Since the Shop System prints in a bed of powder these internal cavities are supported throughout the entire printing process allowing for their easy fabrication.

figure 3



figure 4



05 Evaluation

For EAC, the Shop System has been a success. Using the system, EAC designers are able to produce custom metal ornaments with geometries that are as elaborate as their customers can imagine.

The system's speed, tooling-free nature and ability to print hundreds of parts at a time are helping to cement EAC's role as a leader in the luxury market in France, and can help extend the company's reach going forward.

In addition to opening new realms of creativity for customers, the system is helping EAC to reduce waste, resulting in a greener manufacturing environment, and adding to the company's reputation as a leader in innovative manufacturing solutions.

About Desktop Metal Inc.

Desktop Metal, Inc. is accelerating the transformation of manufacturing with end-to-end metal 3D printing solutions. Founded in 2015 by leaders in advanced manufacturing, metallurgy, and robotics, the company is addressing the unmet challenges of speed, cost, and quality to make metal 3D printing an essential tool for engineers and manufacturers around the world. In 2017, the company was selected as one of the world's 30 most promising Technology Pioneers by the World Economic Forum, and was recently named to MIT Technology Review's list of 50 Smartest Companies. For more information, visit www.desktopmetal.com.

About EAC Metal Ornaments

EAC was founded in 1992, with a focus on the manufacture of metal accessories for the footwear and leather goods markets. In 2002, the company was purchased by Patrick Chouvet, and today has diversified to include the design and manufacture of metal accessories for the swimwear, lingerie, luxury leather goods, luxury packaging, cosmetics and interior design markets. With an in-house research and development office, the company is dedicated to providing creative and diversified metal accessories, jewellery and/or luxury items to brands around the globe seeking to personalise and sign their finished products.



Check out EAC Metal Ornaments Youtube channel below.

<https://www.youtube.com/channel/UCOB-WS1wyrWKJf20lhwmvfQ>